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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/823,235	03/30/2001	Hong Wang	10559-401001 / P10338	6323
20985	7590	07/13/2005	EXAMINER	
FISH & RICHARDSON, PC 12390 EL CAMINO REAL SAN DIEGO, CA 92130-2081			TREAT, WILLIAM M	
			ART UNIT	PAPER NUMBER

2183

DATE MAILED: 07/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

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Office Action Summary

Application No.

09/823,235

Applicant(s)

WANG ET AL.

Examiner

William M. Treat

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 April 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-39 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5-39 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

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1. Claims 1-3 and 5-39 are presented for examination.
2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-3, 5-10, 15-18, and 20-39 are rejected under 35 U.S.C. 102(b) as being anticipated by Nair et al. (Exploiting...).
4. The reasons presented in the examiner's previous actions for rejection of claims 1-3, 5-10, 15-18, and 20-39 as anticipated by Nair continue and are, hereby, incorporated by reference.
5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

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7. Claims 11-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nair in view of Killian Patent No. 6,092,187).

8. The reasons presented in the examiner's previous actions for rejection of claims 11-14 as obvious over Nair in view of Killian continue and are, hereby, incorporated by reference.

9. Claim 19 is rejected under 35 U.S.C. 103(a) as being unpatentable over Nair in view of Tullsen et al. (Simultaneous...).

10. The reasons presented in the examiner's previous actions for rejection of claims 19 as obvious over Nair in view of Tullsen continue and are, hereby, incorporated by reference.

11. Applicant's arguments filed 4/22/05 have been fully considered but they are not persuasive.

12. Applicants have argued, in substance, on behalf of claims 1-3, 5-19, and 32-44 that (a) if a DIF group is a trace, then Nair does not teach a plurality of traces and that (b) Nair does not teach speculative execution of branches; on behalf of claim 11 that (c) the motivation to make the combination of Nair and Killian to improve the confidence in the predictions of Nair is not valid because Nair does not speculatively execute his branches; on behalf of claim 15 that (d) Nair does not teach or suggest combining two traces into a very-long-instruction-word; and on behalf of claims 20-39 that (e) Nair does not teach or suggest any preselected number of initial candidate instructions.

13. As to 9(a), certainly the DIF group, as shown in Fig. 7, meets the criteria for a trace set forth in applicants' claim 1. One might even note the possibility of multiple

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traces, as defined by applicants, existing within the DIF group trace, which is not precluded by applicants' claim language. As to having a plurality of traces, note that on p. 23 in section 4.2 Nair states: "Thus even with a 2-way set associative DIF cache having only 256 entries, the premature replacement of useful paths does not occur." In other words, Nair contemplates multiple DIF groups in his cache.

14. As to 9(b), Nair speculatively executes his path, as defined by the DIF group and those branches within the group. On page 21, section 2.7, Nair states: "DIF predicts the direction of a series of branches once it gets to a certain point." This is speculative execution of the branches.

15. As to 9(c), Nair does teach speculative execution of his branches (paragraph 14, *supra*). Also, Nair suggests the concept of using a confidence metric (p. 21, section 2.7, last paragraph).

16. As to 9(d), applicants note on page 14 of their specification that combining traces into a single VLIW by a DAG optimizer is only possible when sufficient VLIW resources are available to execute both traces in parallel. Nair with his DIF groups which potentially represent a plurality of traces within a trace (as noted in paragraph 13, *supra*, by the examiner) would inherently seek to execute two traces as one vliw/liw when his processor had sufficient resources to execute both, in order to optimize use of his hardware.

17. As to 9(e), Nair taught there is a "maximum slot limit for a group" (p. 19, section 2.5.1, last paragraph), which means Nair suggests a preselected number of initial candidate instructions.

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18. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

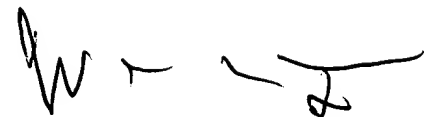
19. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

20. Any inquiry concerning this communication should be directed to William M. Treat at telephone number (571) 272-4175. The examiner works at home on Wednesdays but may normally be reached on Wednesdays by leaving a voice message using his office phone number. The examiner also works a flexible schedule but may normally be reached in the afternoon and evening on three of the four remaining weekdays.

21. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should

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you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in black ink, appearing to read 'W. M. Treat', with a stylized flourish at the end.

**WILLIAM M. TREAT
PRIMARY EXAMINER**